APPENDIX A

GLOSSARY OF TERMS:

Acre-foot	A unit of measurement used to describe volumes of water. 1 ac-ft is 1 foot of water covering a land area of 1 acre (approximately 325,000 gallons [1,230,000 liters]).
Acre	A unit of measurement used to define area. 1 acre = 0.405 hectares
Air Quality	The cleanliness of the air as measured by the levels of pollutants relative to standards or guideline levels established to protect human health and welfare. Air quality is often expressed in terms of the pollutant for which concentrations are the highest percentage of a standard (e.g., air quality may be unacceptable if the level of one pollutant is 150% of its standard, even if levels of other pollutants are well below their respective standards).
Alkali	A soluble salt or mixture thereof present in some soils of arid regions due to high evaporation rates.
Alluvial	A process of land morphology caused by water.
Ambient	Natural condition of the environment at any given time.
Anastomosing	A pattern of stream formation visibly similar to a braid.
Aquifer	A body of rock or sediment that is capable of transmitting groundwater and yielding usable quantities of water to wells or springs. *EPA regulations define "aquifer" as follows (different regulations vary slightly in wording):* An underground geological formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to wells or springs.
Axial	Extending in a direction essentially perpendicular to the plane of a cyclic structure (wheel spokes).
Basalt	A type of igneous rock seen in lava flows.
Basin	A hydrologic area that is bounded by geographic features whereby any water falling within its boundary will be drained internally.
Baseload Plants	Electricity generating units that are operated to meet the constant or minimum load on the system. The cost of energy from such units is usually the lowest available to the system.
Benchmark	A fixed point on the earth's surface from which measurements can be made over great temporal separation.
Binary-Cycle Plant	A geothermal electricity generating plant employing a closed-loop heat exchange system in which the heat of the geothermal fluid (the "primary fluid") is transferred to a lower-boiling-point fluid (the "secondary" or "working" fluid), which is thereby vaporized and used to drive a turbine/generator set.
Bound	Something that limits or restrains. Confine.
Breccia	A sedimentary rock that is formed by the compaction of angular, broken particles into a greater mass.

Brine	A geothermal solution containing appreciable amounts of sodium chloride or other salts.
BTU	British thermal unit. The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at standard conditions. (Equal to 252 calories)
Caldera	A volcanic landform created by the collapse of a composite volcanic summit into the evacuated magma chamber. It has the appearance of a cauldron or basin.
Capillary Action	The action of molecules of a liquid, usually water, adhering to a media thereby traveling along the surface until cohesion becomes stronger than adhesion.
Cap Rocks	Rocks of low permeability that overlie a geothermal reservoir.
Cascading Heat	A process that uses a stream of geothermal hot water or steam to perform successive tasks requiring lower and lower temperatures.
Channel	A confined pathway that can carry liquids within banks across a landscape.
Clastic	Made up of fragments of preexisting rocks.
Condensate	Water formed by condensation of steam.
Condenser	Equipment that condenses turbine exhaust steam into condensate.
Confined	Entirely bounded.
Conglomerate	A sedimentary rock formed by the compaction of rounded to sub-rounded particles into a greater mass.
Cooling Tower	A structure in which heat is removed from hot condensate.
Coprolites	Preserved human feces.
Critical habitat	Habitat essential to the conservation of an endangered or threatened species that has been designated as critical by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service following the procedures outlined in the Endangered Species Act and its implementing regulations (50 *CFR* 424). (See endangered species and threatened species.) The lists of Critical Habitats can be found in 50 CFR 17.95 (fish and wildlife), 50 CFR 17.96 (plants), and 50 CFR 226 (marine species).
Crust	Earth's outer layer of rock. Also called the lithosphere.
Cumulative Impacts	Impacts on the environment that result when the incremental impact of a proposed action is added to the impacts from other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes the other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
Decibel	A unit for expressing the relative intensity of sounds on a logarithmic scale from zero for the average least perceptible sound to about 130 for the average level at which sound causes pain to humans. For traffic and industrial noise measurements, the A-weighted decibel (dBA), a frequency-weighted noise unit, is widely used.

	The A-weighted decibel scale corresponds approximately to the frequency response of the human ear and thus correlates well with loudness.
Detritus	Loose material that results directly from disintegration.
Direct Use	Use of geothermal heat without first converting it to electricity, such as for space heating and cooling, food preparation, industrial processes, etc.
District Heating	A type of direct use in which a utility system supplies multiple users with hot water or steam from a central plant or well field.
Downtime	The period of time in which a facility would not be operational.
Drawdown	The result of well pumping which removes water at the pump head faster than it can migrate to the area resulting in a cone of depression.
Drilling	Boring into the earth to access geothermal resources, usually with oil and gas drilling equipment that has been modified to meet geothermal requirements.
Dry Steam	Very hot steam that doesn't occur with liquid.
Duripan	A subsurface soil horizon that is cemented by illuvial silica, usually opal or microcrystalline forms of silica, to the degree that less than 50 percent of the volume of air-dry fragments will slake in water or HCl.
Efficiency	The ratio of the useful energy output of a machine or other energy-converting plant to the energy input.
Endangered Species	Plants or animals that are in danger of extinction through all or a significant portion of their ranges and that have been listed as endangered by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service following the procedures outlined in the Endangered Species Act and its implementing regulations (50 CFR 424). (See threatened species.) The lists of endangered species can be found in 50 CFR 17.11 (wildlife), 50 CFR 17.12 (plants), and 50 CFR 222.23(a) (marine organisms). *Note: Some states also list species as endangered. Thus, in certain cases a state definition would also be appropriate.*
Enhanced Geothermal Systems	Rock fracturing, water injection, and water circulation technologies to sweep heat from the unproductive areas of existing geothermal fields or new fields lacking sufficient production capacity.
Environmental Assessment (EA)	A concise public document that a Federal agency prepares under the National Environmental Policy Act (NEPA) to provide sufficient evidence and analysis to determine whether a proposed agency action would require preparation of an environmental impact statement (EIS) or a finding of no significant impact. A Federal agency may also prepare an EA to aid its compliance with NEPA when no EIS is necessary or to facilitate preparation of an EIS when one is necessary. An EA must include brief discussions of the need for the proposal, alternatives, environmental impacts of the proposed action and alternatives, and a list of agencies and persons consulted. [See finding of no significant impact, environmental impact statement, and National Environmental Policy Act.]
Environmental Justice	The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation,

	and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies. Executive Order 12898 directs federal agencies to make achieving environmental justice part of their missions by identifying and addressing disproportionately high and adverse effects of agency programs, policies, and activities on minority and low-income populations. (See minority population and low-income population.)
Ephemeral	Lasting a very short time. Often used to define a short lived stream.
Epicenter	The location at the earth's surface which is centrally located above the seismic center of an earthquake movement.
Evaporate	The phase change of a liquid to a gas whereby the volume of liquid is reduced due to loss to the atmosphere.
Evapotranspiration	The combined loss of water from a given area, and during a specified period of time, by evaporation from the soil surface and by transpiration from plants.
Facies	A part of rock or group of rocks that differs from the whole formation (as in composition, age, or fossil content).
Fault	A fracture or fracture zone in the Earth's crust along which slippage of adjacent Earth material has occurred at some time.
Flash Stream	Steam produced when the pressure on a geothermal liquid is reduced. Also called flashing.
Fluvial	The deposition of material by moving water.
Square-Foot	An English unit of measurement used to define area. 1 ft^2 = 0.093 m^2.
Fumarole	A vent or hole in the Earth's surface, usually in a volcanic region, from which steam, gaseous vapors, or hot gases issue.
Geothermal	Of or relating to the Earth's interior heat.
Geothermal Energy	The Earth's interior heat made available to man by extracting it from hot water or rocks.
Geothermal Fluid	Fluid pumped from the ground to be used in an application where potable water is not achievable. Often there are high total dissolved solids in geothermal fluid.
Geothermal Gradient	The rate of temperature increase in the Earth as a function of depth. Temperature increases an average of 1° Fahrenheit for every 75 feet in descent.
Geothermal Heat Pumps	Devices that take advantage of the relatively constant temperature of the Earth's interior, using it as a source and sink of heat for both heating and cooling. When cooling, heat is extracted from the space and dissipated into the Earth; when heating, heat is extracted from the Earth and pumped into the space.
Geyser	A spring that shoots jets of hot water and steam into the air.

Geysers, The	A large geothermal steam field located north of San Francisco.
Graben	A block of the earth's crust separated by faults from adjacent relatively lifted blocks (horsts).
Groundwater	Water below the ground surface in a zone of saturation.
Heat Flow	Movement of heat from within the Earth to the surface, where it is dissipated into the atmosphere, surface water, and space by radiation.
Hectare	A measure of area equal to 10,000 square meters or 2.47 acres.
Horst	A block of the earth's crust separated by faults from adjacent relatively depressed blocks (grabens).
Hydrothermal Resources	Underground systems of hot water and/or steam.
Igneous	A type of rock that is formed from by the solidification of intrusive or extrusive magma.
Indurated	The process of hardening.
Inholdings	Ownership of land partially or completely contained within a land area owned or managed by another.
Injection	The process of returning spent geothermal fluids to the subsurface. Sometimes referred to as reinjection.
Intermittent	Occurring occasionally. Not constant.
Intermontane	Situated between mountains.
KGRA	Known Geothermal Resource Area. A region identified by the U.S. Geological Survey as containing geothermal resources.
Kilowatt	A unit of electric power equal to 1,000 watts. Abbreviated kW.
Kilowatt-Hour	The energy represented by 1 kilowatt of power consumed for a period of 1 hour, equal to 3,413 BTU's. Abbreviated kWh.
Load	The simultaneous demand of all customers required at any specified point in an electric power system.
Low-Income Population	Low-income populations, defined in terms of Bureau of the Census annual statistical poverty levels (Current Population Reports, Series P-60 on Income and Poverty), may consist of groups or individuals who live in geographic proximity to one another or who are geographically dispersed or transient (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect. (See environmental justice and minority population.)
Magma	Molten rock within the Earth, from which igneous rock is formed by cooling.

Magnitude	A number representing the intrinsic or apparent intensity of an earthquake on a logarithmic scale.
Mantle	The Earth's inner layer of molten rock, lying beneath the Earth's crust and above the Earth's core of liquid iron and nickel.
Megawatt	A unit of electrical measurement equal to 1,000 kilowatts.
Metamorphic	A type of rock formed by recrystalization of an existing rock either by heat or by pressure.
Meteorological	Of relating to the atmosphere and weather.
Meter	A unit of metric measurement used to define distance. 1 meter = 3.3 feet.
Minority Population	Minority populations exist where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than in the general population or other appropriate unit of geographic analysis (such as a governing body's jurisdiction, a neighborhood, census tract, or other similar unit). "Minority" refers to individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. "Minority populations" include either a single minority group or the total of all minority persons in the affected area. They may consist of groups of individuals living in geographic proximity to one another or a geographically dispersed/transient set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect. (See environmental justice and low-income population.)
National Environmental Policy Act of 1969 (NEPA)	NEPA is the basic national charter for protection of the environment. It establishes policy, sets goals (in Section 101), and provides means (in Section 102) for carrying out the policy. Section 102(2) contains "action-forcing" provisions to ensure that Federal agencies follow the letter and spirit of the Act. For major Federal actions significantly affecting the quality of the human environment, Section 102(2)(C) of NEPA requires Federal agencies to prepare a detailed statement that includes the environmental impacts of the proposed action and other specified information.
Normal Fault	A fault in which the hanging wall has been displaced downward in relation to the footwall.
Orogeny	The process of mountain building involving non-uniform movement of faults and plates comprising the lithosphere, usually associated with plate tectonics.
Particulate Matter	Any finely divided solid or liquid material, other than uncombined (i.e., pure) water. A subscript denotes the upper limit of the diameter of particles included. Thus, PM_{10} includes only those particles equal to or less than 10 micrometers (0.0004 inch) in diameter; $PM_{2.5}$ includes only those particles equal to or less than 2.5 micrometers (0.0001 inch) in diameter.
Peaking Plants	Electricity generating plants that are operated to meet the peak or maximum load on the system. The cost of energy from such plants is usually higher than from baseload plants.

Perennial	Year long.
Permeability	The capacity of a substance (such as rock) to transmit a fluid. The degree of permeability depends on the number, size, and shape of the pores and/or fractures in the rock and their interconnections. It is measured by the time it takes a fluid of standard viscosity to move a given distance. The unit of permeability is the Darcy.
pH	A unit of measurement depicting the reactivity of a substance. A pH below 7.0 is acidic, while a pH above 7.0 is basic or alkaline. 7.0 is neutral.
Physiographic	A conjunction of physical geography used to define distinct demarcations of land. A region all parts of which are similar in geologic structure and climate and which has consequently had a unified geomorphic history. A region whose pattern of relief features or landforms differs significantly from that of adjacent regions.
Piedmont	The eroded flank of a mountain that forms a curtain of debris at the toe slope.
Plate Tectonics	A theory of global-scale dynamics involving the movement of many rigid plates of the Earth's crust. Tectonic activity is evident along the margins of the plates where buckling, grinding, faulting, and volcanism occur as the plates are propelled by the forces of deep-seated mantle convection currents. Geothermal resources are often associated with tectonic activity, since it allows groundwater to come in contact with deep subsurface heat sources.
Pleistocene	A period in geologic time generally associated with the ice age.
Plume	The elongated volume of contaminated water or air originating at a pollutant source such as an outlet pipe or a smokestack. A plume eventually diffuses into a larger volume of less contaminated material as it is transported away from the source.
Plutonic Bodies	A typically large mass of intrusive igneous rock.
Pluvial	Originally a term used to describe mesic conditions; has come to be commonly used to describe Pleistocene lakes.
Porosity	The ratio of the aggregate volume of pore spaces in rock or soil to its total volume, usually stated as a percent.
Pyroclastic	Formed by or involving fragmentation as a result of volcanic or igneous action.
Relative Humidity	The percent saturation of water vapor in a given air mass relative to what the air mass is capable of holding. Relative humidity is based on temperature whereby the warmer an air mass becomes, the greater amount of water vapor it is capable of storing. If an air mass cools, the percent saturation relative to the cooling air masses storage capacity will increase up to 100 % (dew point), then condensation of the vapor will occur.
Relict	A relief feature or rock remaining after other parts have disappeared.
Reservoir	A natural surface or underground container of liquids, such as water or steam (or, in the petroleum context, oil or gas).
Salinity	A measure of the quantity or concentration of dissolved salts in water.

Scoping	An early and open process for determining the scope of issues to be addressed in an environmental impact statement (EIS or EA) and for identifying the significant issues related to a proposed action.
Sedimentary	A type of rock that is formed by the compaction and compression of detritus.
Seismic	Of, subject to, or caused by an earthquake.
Semiconfined	Partially bounded.
Sheetflow	The action of water flowing in a sheet-like manner rather than channelized.
Sheetwash	See Sheetflow.
Subbasin	A basin that is wholly encapsulated within a larger basin.
Subsidence	A sinking of an area of the Earth's crust due to fluid withdrawal and pressure decline.
Surface Water	All bodies of water on the surface of the earth and open to the atmosphere, such as rivers, lakes, reservoirs, ponds, seas, and estuaries.
Surplus	Excess.
TDS	Total dissolved solids. Used to describe the amount of solid materials in water.
Tectonic	The action of land formation due to geological and structural catalysts.
Temperature Inversion	The atmospheric process of warm air capping cool air below it resulting in a highly stable atmosphere and a lack of vertical air circulation. Often times, temperature inversions are associated with high levels of atmospheric pollution and typically are not displaced until the arrival of the next storm system.
Thermal Gradient	The rate of increase or decrease in the Earth's temperature relative to depth.
Threatened Species	Any plants or animals that are likely to become endangered species within the foreseeable future throughout all or a significant portion of their ranges and which have been listed as threatened by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service following the procedures set out in the Endangered Species Act and its implementing regulations (50 CFR 424). (See endangered species.) The lists of threatened species can be found at 50 *CFR* 17.11 (wildlife), 17.12 (plants), and 227.4 (marine organisms). *Note: Some states also list species as threatened. Thus, in certain cases a state definition would also be appropriate.*
Topographic Relief	The existence and character of land height differences from one location to another.
Transmission Line	Structures and conductors that carry bulk supplies of electrical energy from power-generating units.
Transmissivity	The ability for a media to transmit a substance from one location to another.

Tuff	A rock composed of the finer kinds of volcanic detritus usually fused together by heat.
Turbine	A bladed, rotating engine activated by the reaction or impulse, or both, of a directed current of fluid. In electric power applications, such as geothermal plants, the turbine is attached to and spins a generator to produce electricity.
Unconfined	Without bounds.
Unconsolidated	Lacking internal strength and firmness.
Vapor-Dominated	A geothermal reservoir system in which subsurface pressures are controlled by vapor rather than by liquid. Sometimes referred to as a dry-steam reservoir.
Well Logging	Assessing the geologic, engineering, and physical properties and characteristics of geothermal reservoirs with instruments placed in the wellbore.
Wetlands	Those areas that are inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas (e.g., sloughs, potholes, wet meadows, river overflow areas, mudflats, natural ponds). *Jurisdictional wetlands* are those wetlands protected by the Clean Water Act. They must have a minimum of one positive wetland indicator from each parameter (i.e., vegetation, soil, and hydrology). The U.S. Army Corps of Engineers requires a permit to fill or dredge jurisdictional wetlands.